U.S. ENVIRONMENTAL PROTECTION AGENCY

Region 9

Guidance on
Implementing the Antidegradation Provisions
of 40 CFR 131.12

RICHARD A. CODDINGTON
Acting Director
Water Management Division

June 3, 1987
Date

PURPOSE

This document provides general program guidance for the States of Region 9 on the development of procedures for implementing State antidegradation policies. The focus of this guidance is on 40 CFR 131.12 of the water quality standards regulation (promulgated in 48 FR 51407, dated November 8, 1983) which sets out requirements to be met before any action is taken that would lower the quality of the Nation's waters.

BACKGROUND

Section 101(a) of the Clean Water Act defines the national goal of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters. Section 303(a)(4) of the Clean Water Act explicitly refers to satisfaction of the antidegradation requirements of 40 CFR 131.12 prior to taking various actions which would lower water quality. 40 CFR 131.12 requires that antidegradation provisions at least as stringent as those specified in that regulation be adopted by States as part of their water quality standards.

This guidance identifies the tasks to be performed by States to implement Section 131.12 of the water quality standards regulation. Those tasks that need the development of decision criteria by the States are identified. Such criteria are necessary to define those actions which require detailed economic or water quality impact analyses. The Agency expects States to develop and document these criteria in their antidegradation implementation procedures, for review and approval by EPA regional offices. The Agency's objective is to achieve the goals of the Act through an integrated approach to eliminating water pollution which includes the consistent application of State antidegradation policies. Figure 1 lays out the decision making process of an antidegradation analysis.

Many of the procedures identified herein are already performed by States as part of their regulatory programs. Consequently, this document primarily serves to delineate, in a consistent manner, the criteria EPA Region 9 will be using to evaluate both State and EPA decisions, for compliance with 40 CFR 131.12.

TIER III WATERS - Outstanding National Resource Waters

40 CFR 131.12(a)(3) prohibits any action which would lower water quality in waters designated as Outstanding National Resource Waters (ONRWS). Examples of such waters include, but are not limited to, waters of National and State parks and wildlife refuges, and waters of exceptional recreational or ecological significance.

TIER I WATERS

40 CFR l31.12(a)(l) prohibits any action which would lower water quality below that necessary to maintain and protect existing uses. In cases where water quality is just adequate to support the propagation of fish, shell fish and wildlife and recreation in and on the water, such water quality must be maintained and protected. In cases where water quality is lower than necessary to support these uses, the requirements in Section 303(d) of the Act, 40 CFR 131.10 and other pertinent regulations must be satisfied. Guidance concerning actions affecting these waters has been published elsewhere and will not be repeated here.

TIER II WATERS - High Quality Waters

Applicability

40 CFR 131.12 establishes certain minimum requirements for States to adopt regulating actions which would lower water quality in high quality waters. These waters are defined as those in which water quality exceeds that necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water. Any action which would result in, or which would permit, a lowering of water quality must be addressed in State implementation procedures. Actions covered by antidegradation provisions include, but are not limited to the following:

Permit Actions

1. Issuance/Re-issuance/Modification of NPDES permits

2. Issuance of variances (e.g. 301(h), 301(m), etc.)

3. Issuance of permits for urban runoff

4. Issuance of Section 404 permits

5. Adoption of or alteration of mixing zones

6. Relocation of discharge

7. Commencement of discharge from a new source

8. Increases in the discharge of pollutants from point sources due to:

   a. Industrial production increases

   b. Municipal growth

   c. New sources

   d. Etc.

Standards/Load Allocation Actions

1. Water quality standards revisions

2. Revision of wasteload allocations

3. Reallocation of abandoned loads

4. Section 401 certifications (for example: concerning FERC licenses, Corps' actions, etc.)

5. Section 208 or Section 303(e) approvals

6. WQM plan approvals

"Non-point Source" Actions

1. Changes in BMPs

2. Resource management plan approvals

3. Land Management (e.g. Forest) plan adoptions, certifications or approvals

4. Changes in regulated agricultural activities

5. Changes in regulated silvicultural activities

6. Changes in regulated mining activities

7. Construction and operation of roads, dams, etc.

Other Actions

1. RCRA/CERCLA actions

2. Construction grant activities

3. Other "major Federal actions" (pursuant to NEPA and the Endangered Species Act)

4. Water quantity/water rights actions which affect water quality

5. Federal actions regulated by Section 313 of the Clean Water Act

Prior to proceeding with a detailed analysis of these or similar actions, the affected water body should be assessed to determine whether or not it falls into either Tier I or Tier III. If so, actions which would lower water quality in such waters are prohibited. Otherwise, the water body should be assessed to determine the adequacy of the beneficial uses and water quality criteria designated for that water body. Adequate water quality standards must be adopted and approved for an affected water body, pursuant to 40 CFR 131 prior to allowing any action to proceed which would lower water quality in that water body.

The first step in any antidegradation analysis is to determine whether or not the proposed action will lower water quality (see Figure 1). If the action will not lower water quality, no further analysis is needed and EPA considers 40 CFR 131.12 to be satisfied. If the action could or will lower water quality, and the affected water is not a Tier I or Tier III water, then the steps to be followed to determine whether or not 40 CFR 131.12 is satisfied are described in the following sections of this guidance.

Both point and non-point sources of pollution are subject to antidegradation requirements. While point sources are generally well regulated, procedures for controlling non-point source pollution have not been as extensively defined. Cost-effective and reasonable best management practices for non-point source controls must be designed to meet water quality standards. EPA policy, first issued as SAM-32 on November 14, 1978, states that where applicable water quality standards are not met, revised or additional best management practices (BMPs) should be applied in an iterative process to improve water quality to the point that standards are attained, and that designated uses are maintained and protected. In Region 9, States generally have broad authority to regulate non-point sources. As part of their implementation methodologies, States must adopt procedures which adequately assure that non-point sources of water pollution will comply with the antidegradation requirements of 40 CFR 131.12.

Implementation Procedures

Four basic elements should be included in State implementation procedures to ensure that actions affecting water quality are consistent with the provisions of 40 CFR 131.12. They are:

- Task A - Identify Actions that Require Detailed Water Quality and Economic Impact Analyses
- Task B - Determine that Lower Water Quality Will Fully Protect Designated Uses
- Task C - Determine That Lower Water Quality is Necessary to Accommodate Important Economic or Social Development in the Area in which the Waters are Located
- Task D - Complete Intergovernmental Coordination and Public Participation

Task A - Identify Actions that Require Detailed Water Quality and Economic Impact Analyses

This task established the types of analyses required for all actions that lower water quality in Tier II waters and decision criteria that define the degree of water quality and economic analysis required.

State procedures should include three parts. First, the State should develop procedures to document the degree to which water quality exceeds that necessary to protect the uses. Ambient monitoring data can be used to provide this documentation. States must adopt procedures to assure that, where little or no data exists, adequate information will be available to determine the existing quality of the water body or bodies, which could be adversely affected by the proposed action. Such procedures should include both an assessment of existing water quality and a determination of which water quality parameters and beneficial uses are likely to be affected. These assessments and determinations could be performed either by the State or the party proposing the action in question.

Second, the State should develop procedures that quantify the extent to which water quality will be lowered as a result of the proposed action. Simple mass balance calculations or more detailed mathematic modelling, such as that contained in waste-load allocations, can provide this information. Third, the State should develop decision criteria to define the degree of water quality change that warrants detailed water quality and economic impact analyses. Decision criteria could be based on direct measures, such as an absolute or percent change in ambient concentrations of the affected parameter or indirect measures such as changes in primary productivity caused by nutrients or changes in diurnal dissolved oxygen fluctuations.

Repeated or multiple small changes in water quality (such as those resulting from actions which do not require detailed analyses) can result in significant water quality degradation. To prevent such cumulative adverse impacts, a baseline of water quality must be established for each potentially affected water body, prior to allowing any action which would lower the quality of that water. This baseline should remain fixed unless some action improves water quality. At such time, the baseline should be adjusted accordingly.

Proposed actions to lower water quality should then be evaluated with respect to the baseline and the resultant water quality change should be determined. This determination should include the cumulative impacts of all previous and proposed actions and reasonably foreseeable actions which would lower water quality below the established baseline. Should the cumulative impact of actions significantly degrade water quality, more

detailed water quality and economic impact analyses would be necessary.

In any case, whether or not water quality is significantly lowered (thus leading to an economic analysis), the State must find that any action which would lower water quality is necessary to accommodate important economic and social development. Such a finding must include, at a minimum, the following determinations:

1. That economic and social development will occur, e.g. there will be new or increased production of goods or services by the party proposing the change, population will grow in the service area of a sewage treatment plant, etc.

2. That this economic or social development requires the lowering of water quality which cannot be mitigated through reasonable means.

3. That the lower water quality does not result from inadequate wastewater treatment facilities, less-than-optimal operation of adequate treatment facilities, or failure to implement or comply with methodologies to reduce or eliminate non-point source pollution.

Task B - Determine that Lower Water Quality Will Fully Maintain and Protect Designated Uses

All actions that could lower water quality in Tier II waters require a determination that existing uses will be fully maintained and protected. States should develop methodologies for making this determination.

Tier II waters, by definition, are those in which the water quality is better than necessary to support and maintain the biota and beneficial uses of the water. In most cases, specific numerical standards do not exist to protect these uses. Where such standards do exist, they are generally established to provide the minimum acceptable quality to protect the beneficial uses of the water. Often, such standards are established on a statewide or drainage basin-wide basis and thus may not adequately protect the biota or the uses of specific reaches. Consequently, comparing existing or projected water quality with adopted standards may not adequately define whether or not beneficial uses will be fully maintained and protected.

Water quality must also meet any applicable public health standards as well as maintain and protect the existing growth and reproduction of resident species. The water quality criteria guidance developed by EPA per §304(a) of the Clean Water Act provides a basis for this assessment. However, national water quality criteria (such as those contained in the "Gold Book") may not fully protect resident species. The criteria may not protect locally occurring species that either may not have been tested, or that have been tested, but require greater protection than the criteria provide. This determination involves a comparison of the species upon which biological testing has been completed in the criteria development documents with the species resident to the water body where water quality may be lowered. If the resident species are not adequately represented in the database, additional testing should be completed before lower water quality is allowed. Implementation methods should include procedures for making this comparison and define the circumstances (e.g., in terms of water quality change or extent of the biological testing database) that would require additional biological testing before water quality can be lowered.

Water quality criteria for dissolved oxygen or conventional and non-conventional pollutants may be subject to the same limitations and should be considered in the same way. For parameters for which no criteria guidance has been developed, biological testing or acceptable site specific criteria may be used to determine that lower water quality will fully maintain and protect designated uses.

The lowering of water quality through the discharge of conservative or persistent pollutants merits more intensive consideration by States, due to the bioacculumative potential of these pollutants. These pollutants, particularly carcinogens, which are considered to have no safe "threshold" concentration, should have more stringent antidegradation requirements established for their analysis.

Other methods of determining whether or not beneficial uses are being maintained and protected include biological assessments, such as the aquatic ecoregions procedure, or ambient toxicity testing using standardized species. In some cases, assessing the quality of water bodies on a pollutant-specific basis could prove costly, particularly for waters in -which a number of

discharges are located or for complex effluents. EPA's recently developed acute and chronic toxicity methodologies for assessing the toxicity of effluents or receiving waters could provide a more comprehensive and affordable alternative.

Task C - Determine that Lower Water Quality is Necessary to Accommodate Important Economic or Social Development

Actions which the State determines in Task A to significantly lower water quality require a determination that such actions are necessary for important economic or social development. 40 CFR 131.12(a)(2) and the August 1985 "Questions and Answers on Antidegradation", give general guidance on how to make this determination. Explicit criteria defining "important economic or social development" have purposely not been developed by EPA Headquarters, because of the varying environmental, economic and social conditions of localities throughout the country. Further explication of EPA Region 9's expectation concerning these determinations is appropriate and is presented below.

The fundamental requirement of this task is to establish a strong tie between the proposed lower water quality level and "important" economic or social development. If the party seeking the change in water quality cannot demonstrate the relationship between such development and water quality, then the proposed action is prohibited.

Demonstration of important economic or social development entails two steps. First, the party should describe and analyze the current state of economic and social development in the area that would be affected. The purpose of this step is to determine the "baseline" economic and social status of the affected community, i.e., the measure against which the effect of the water quality downgrade is judged. The area's use or dependence upon the water resource affected by the proposed action should be described in the analysis. The following factors should normally be included in the baseline analysis:

- Population
- Area employment (numbers employed, earnings, major employers);
- Area income (earnings from employment and transfer payments, if known);

- Manufacturing profile: types, value, employment, trends;

- Government fiscal base: revenues by source (employment and sales taxes, etc.)

Second, the party seeking the change in water quality should then demonstrate the extent to which the sought-for level of water quality would create an incremental increase in the rate of economic or social development and why the change in water quality is necessary to achieve such development. The party should provide analysis, along with the supporting data used in its preparation, showing the extent to which the factors listed above will benefit from the change in water quality requested. The analysis should demonstrate why such economic and social development requires the lower water quality. other alternatives or changes in the project or other mitigation measures. which would prevent degradation of water quality should be identified in this analysis. The following factors may be included in the analysis of incremental effects expected to result from the degradation in water quality:

- Expected plant expansion;

- Employment growth;

- Direct and indirect income effects;

- Increases in the community tax base

Other components of this analysis could include an assessment of the overall environmental benefits to be achieved by the proposed action and the tradeoffs to be considered among the various media. The relative costs of various alternatives to the proposed action could also be analyzed.

The requirements for a given analysis will be site-specific, depending upon factors such as data availability, conditions specific to the relevant water body, the area of impact (city, county, State-wide), etc. The economic analysis may include estimation of the treatment costs necessary to maintain existing water quality; e.g. land treatment or advanced treatment. Staff of the EPA Regional office are available to assist States in determining the exact requirements of an analysis of

specific proposals to lower water quality. In addition, the Economic Analysis Branch in EPA Headquarters' Office of Water can assist State and Regional staff, when necessary.

Task D - Complete Intergovernmental Coordination and Public Participation

Public notification pursuant to 40 CFR 131.12 is required for all actions that lower water quality in Tier II waters. EPA requires that proposed actions which degrade water quality be reviewed by other appropriate agencies and that the public be given an opportunity to comment.

Documentation and public notification under antidegradation need not be a lengthy process in many cases and can be combined with other actions that require public notification. The public participation requirement may be met by holding a public hearing, e.g., as part of the adoption of an NPDES permit, as long as proper notice of a standards action is provided to the public (see WQS Handbook). Intergovernmental coordination consists of requests for review of proposed actions by affected local, State and Federal agencies, such as area-wide planning agencies, fish and wildlife agencies, etc.

The following is a summary of the public notification required to comply with the antidegradation provisions of the WQS regulation:

- A statement that the action must comply with the State's antidegradation policy and a description of the policy.
- A determination that existing uses will be maintained and protected. This will require an assessment and documentation for public review of (a) the amount the water quality currently exceeds that necessary to protect the existing and designated uses, and (b) the amount that water quality will be lowered as a result of the proposed action (see Task A).
- A summary of other actions, if any, that have lowered water quality and a determination of any cumulative impacts.
- A determination that lower water quality is necessary to

accommodate important economic or social development. This will require a detailed analysis or the rationale used to determine that a detailed analysis is not required (see Tasks A and C).

- A description of the intergovernmental coordination that has taken place.

- A determination that there has been achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for non-point sources.

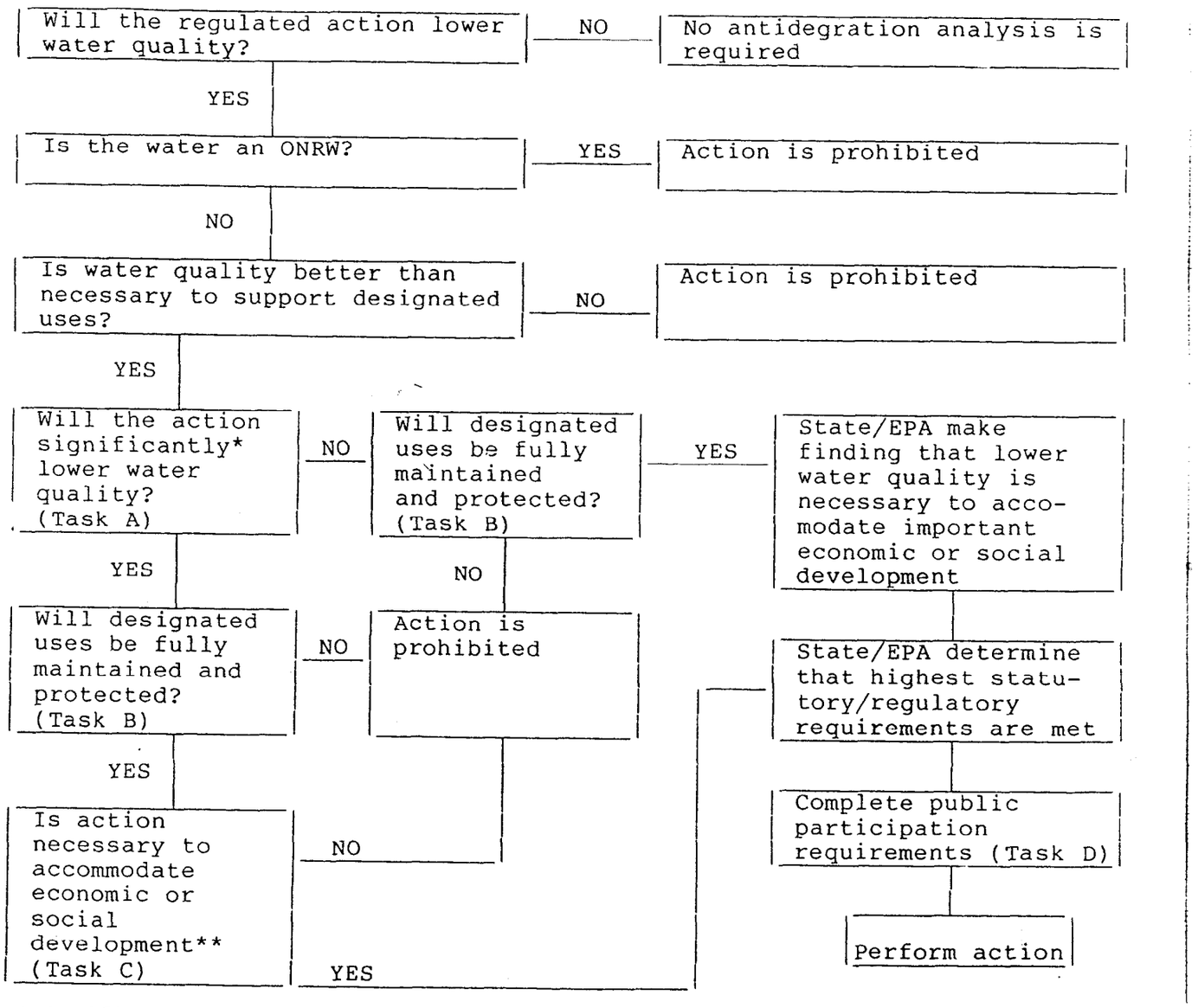
OTHER CONSIDERATIONS

1. The decision criteria for determining that detailed water quality and economic analyses are needed may vary with the types of chemical pollutants. Some chemicals are believed to elicit an effect at a certain concentration (i.e., threshold chemicals). Other chemicals (i.e., non-threshold chemicals) have no safe level. Non-threshold chemicals include carcinogens, mutagens and teratogens. States are urged to apply more stringent review procedures to non-threshold chemicals.

2. NPDES permits do not routinely contain numerical limits for all of the substances found in a discharger's effluent. Nevertheless, all substances are subject to antidegradation policy implementation, whether or not they are specifically limited in the permit. To apply antidegradation to substances not currently limited in the permit, the State can utilize the notification procedures specified in 40 CFR 122.42, requiring dischargers to notify the State pollution control agency of any actual or anticipated change in effluent characteristics, as compared with those existing at the time the permit was issued.

FIGURE 1

Antidegradation Flow Chart



*Significance level and effect of cumulative impacts as defined by State

**Based on criteria defined by State